## C6. Tide and Water Level Corrections

The application of SBET navigation positioned soundings vertically on the NAD83 (CORS96) ellipsoid. VDatum version 2.24 and the region file Oregon – Central Oregon (version 01) was used to build the separation model used to reduce soundings from NAD83 to MLLW in CARIS. To generate the model file, a three-second grid with zero elevations at all nodes was created encompassing the entire survey area. VDatum was used to compute NAD83 elevations relative to MLLW of all nodes in the grid file. GEOID03 was selected during the VDatum transformation. The output was then converted to the same format as Geoid grid models generated by the NGS, which can be used by Hypack and Caris HIPS to convert ellipsoid heights directly to a mapping datum. In order to provide a check to the grid values, at a select point the MLLW to NAD83 separation was independently computed by using VDatum to transfer from MLLW to NAVD88, and then Corpscon to transfer from NAVD88 to NAD83. The resulting elevations compared to the original grid points within .0004 meters. The model file, *SOrgGRS.bin*, has been included with the survey's digital deliverables.

As a confidence check on the GPS tide computation, GPS tide readings off the R/V *Pacific Storm* were recording for one hour while at berth in Newport, OR, near the CO-OPS tide gauge at South Beach, OR (943-5380); and for the R/V *Jab* while adjacent to CO-OPS tide gauge at Garibaldi, OR(943-7540). GPS measurements were processed using techniques identical to processing for all collected survey data and then compared to verified tide data. The resulting GPS-derived water level over the one hour period differed by an average of .016 meters with a standard deviation of .012 meters for the South Beach, OR comparison; and .007 meters with a standard deviation of .019 meters for the Garibaldi, Oregon comparison.